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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte TAO CHEN, SERGE WILLENEGGER,
EDWARD G. TIEDEMANN, JR., and JUN WANG

Appeal 2008-3232
Application 10/056,278
Technology Center 2600

Decided: October 29, 2008

Before MAHSHID D. SAADAT, JOHN A. JEFFERY, and KARL D.
EASTHOM, *Administrative Patent Judges*.

JEFFERY, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134 from the Examiner's rejection of claims 1-12 and 14-27. We have jurisdiction under 35 U.S.C. § 6(b). We AFFIRM-IN-PART.

STATEMENT OF THE CASE

Appellants invented a method, a receiver, and a digital signal processor for combining received transmissions from a number of signal sources to recover a message. Each message has a number of frames. When the received message includes erased frames, good frames from one or more other transmissions are substituted for the erased frames. The good frames from a first transmission are combined with the good frames of one or more of the other transmissions to generate a message. This technique improves receiver performance and lowers transmission power levels.¹ Independent claim 1 is reproduced below:

1. A method for selectively combining a plurality of received transmissions from a plurality of respective signal sources to recover a message comprised of a plurality of frames, comprising:

processing each of the plurality of received transmissions from the plurality of respective signal sources separately to recover the message; and

if the message cannot be recovered error-free from a single received transmission,

determining erased frames in a message recovered from a first received transmission,

determining good frames recovered from remaining ones of the plurality of received transmissions,

forming at least one combined message, wherein each combined message includes a particular combination of good frames substituting for the erased frames, and

checking each combined message to determine whether it is good or erased.

¹ See generally Spec. ¶¶ 1007-1011 and 1054-1062.

The Examiner relies upon the following as evidence in support of the rejection:

Campana, Jr.	US 5,446,759	Aug. 29, 1995
Keskitalo	US 5,920,553	Jul. 6, 1999
Alanara	US 6,286,122 B1	Sep. 4, 2001
Mallory	US 6,335,933 B1	Jan. 1, 2002

(1) The Examiner rejected claims 1, 3, 6-8, 19, 20, 22,² 26, and 27 under 35 U.S.C. § 103(a) as being unpatentable over Mallory and Campana, Jr.

(2) The Examiner rejected claims 2, 9-12, 14-17, 21, 24, and 25 under 35 U.S.C. § 103(a) as being unpatentable over Mallory, Campana, Jr., and Keskitalo.

(3) The Examiner rejected claims 4, 5, 18, and 23 under 35 U.S.C. § 103(a) as being unpatentable over Mallory, Campana, Jr., and Alanara.

Rather than repeat the arguments of Appellants or the Examiner, we refer to the Briefs³ and the Answer⁴ for their respective details. In this

² Claim 22 depends from claim 21, which has been rejected over Mallory, Campana, Jr., and Keskitalo (Ans. 6). The Examiner erroneously listed claim 22 as rejected over Mallory and Campana, Jr. (Ans. 3). Although Appellants did not argue this error and we nonetheless deem it harmless, since the rejection of claim 22 relies on the disclosure of Mallory, and Mallory has been included in the rejection of claim 21. Based on the record before us, we presume the Examiner intended to reject claim 22 as being unpatentable over Mallory, Campana, Jr., and Keskitalo.

³ We refer to the Appeal Brief filed March 21, 2007, and the Reply Brief filed September 17, 2007, throughout this opinion.

⁴ We refer to the most recent Examiner's Answer mailed July 17, 2007, throughout this opinion.

decision, we have considered only those arguments actually made by Appellants. Arguments, which Appellants could have made but did not make in the Briefs, have not been considered and are deemed to be waived. *See* 37 C.F.R. § 41.37(c)(1)(vii).

Appellants group the claims as follows: (1) claims 1, 3, 6-8, 19, 20, 22, 26, and 27; (2) claims 2, 9-12, 14-17, 21, 24, and 25; and (3) claims 4, 5, 18, and 23 (App. Br. 14-22). We address each grouping separately.

REJECTION OVER MALLORY AND CAMPANA, JR.

We first turn the rejection of claims 1, 3, 6-8, 19, 20, 22,⁵ 26, and 27 under 35 U.S.C. § 103(a) as being unpatentable over Mallory and Campana, Jr. Since independent claims 1, 19, 26, and 27 differ in scope, each claim and its corresponding dependent claims will be discussed separately.

Claims 1, 3, and 6-8

The Examiner finds that the combination of Mallory and Campana, Jr. teaches all the recited elements of independent claim 1 (Ans. 3-5). Appellants argue that the cited prior art does not teach limitations, “each combined message includes a particular combination of good frames substituting for the erased frames” and a “plurality of received transmissions from the plurality of respective signal sources,” recited in claim 1 (App. Br. 14-15; Reply Br. 14-15⁶).

⁵ *See* n.2, *supra*, of this opinion.

⁶ For each subsequent reference to the Appeal Brief, the same argument can be located on identical pages of the Reply Brief.

ISSUE

The following issue has been raised in the present appeal:

Whether Appellants have shown that the Examiner erred in finding that Campana, Jr. teaches the step of determining good frames recovered from remaining ones of the plurality of received transmission and thus each message includes a combination of good frames substituted for the erased frames as recited in claim 1.

FINDINGS OF FACT

The record supports the following findings of fact (FF) by a preponderance of the evidence.

1. Campana, Jr. discloses a plurality of signal sources 124 which simulcast a message within a coverage area. Each transmitter 124 is limited by the line-of-sight distance between the transmitter 124 and receiver 104 (Campana, Jr., col. 57, ll. 11-21; Fig. 11).
2. Campana, Jr. also shows that each transmitter 124 includes the carrier 106 modulated with a subcarrier. The subcarrier may include two identical symbol streams or first and second transmissions (Campana, Jr., col. 46, ll. 18-24 and col. 56, ll. 1-6 and 34-55; Figs. 7A, B, and 11).
3. The first and second transmissions on each carrier 106 received by a receiver 104 are from one source or transmitter 124 within the coverage area (Campana, Jr., col. 56, ll. 1-6; Fig. 11).
4. Campana, Jr. teaches transmitting a first symbol stream or transmission from one signal source 124. Campana, Jr. also teaches transmitting a second time-delayed symbol stream or transmission

- from the same signal source 124 (Campana, Jr., col. 47, ll. 48-57, col. 56, ll. 1-6 and 34-42 and col. 57, ll. 38-45; Figs. 7A, 7B, 8, and Fig. 11).
5. Campana, Jr. determines erased or erroneous frames or markers recovered from the first transmission and good frames or characters recovered from the second transmission from a source or transmitter 124. Campana, Jr. further teaches substituting good frames from the second transmission with the erased frames of the first transmission and combining the frames into a combined message (col. 59, ll. 22-42 and col. 95, l. 47 – col. 96, l. 9; Fig. 33).

PRINCIPLES OF LAW

Discussing the question of obviousness of a patent that claims a combination of known elements, *KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727 (2007), explains:

When a work is available in one field of endeavor, design incentives and other market forces can prompt variations of it, either in the same field or a different one. If a person of ordinary skill can implement a predictable variation, § 103 likely bars its patentability. For the same reason, if a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill. *Sakraidia* [v. *AG Pro, Inc.*, 425 U.S. 273 (1976)] and *Anderson's-Black Rock* [v. *Pavement Salvage Co.*, 396 U.S. 57 (1969)] are illustrative—a court must ask whether the improvement is more than the predictable use of prior art elements according to their established functions.

KSR, 127 S. Ct. at 1740.

If the Examiner's burden is met, the burden then shifts to the Appellants to overcome the prima facie case with argument and/or evidence. Obviousness is then determined on the basis of the evidence as a whole and the relative persuasiveness of the arguments. *See In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992).

ANALYSIS

Appellants first argue that, while Campana, Jr. includes multiple sources 124 in order to provide adequate coverage (App. Br. 16), the plurality or two transmissions discussed in Campana, Jr. and shown in Figures 7A and 7B originate from the same source (*Id.*). Appellants, thus, assert Campana, Jr. fails to teach the limitation of "each combined message includes a particular combination of good frames substituting for the erased frames" recited in claim 1. We agree for the following reasons.

Campana, Jr. teaches receiving a first and a second time-delayed transmission from source 124 (FF 2-4). Because Campana, Jr. receives these transmissions from a single source, Campana, Jr. determines erased frames recovered from a first transmission and good frames recovered from a second transmission are from the *same* source (FF 5). In contrast, claim 1 requires "determining good frames recovered from *remaining ones of* the plurality of received transmissions" (emphasis added). As recited, of these remaining received transmissions, one must come from another signal source in order to process "each of the plurality of received transmissions from the plurality of respective signal sources separately to recover the message" as required by claim 1. Campana, Jr., therefore, does not teach the

limitation of “determining good frames recovered from remaining ones of the plurality of received transmissions” as recited by claim 1.

Additionally, Campana, Jr. discloses a plurality of signal sources 124 which simulcast a message within a coverage area (FF 1). However, as Appellants contend (App. Br. 16), the first and second transmissions received by the receiver 104 are from a single source or transmitter 124 within the coverage area. Figure 11 of Campana, Jr. illustrates that each transmitter 124 sends the carrier 106 modulated with a subcarrier to a receiver 104 (FF 2-4). Thus, when Campana, Jr. processes each of the plurality of received transmissions to recover a message, the transmissions originate from a single source and not a plurality of sources as claim 1 requires. Campana, Jr. also does not combine “a plurality of received transmissions from a plurality of signal sources to recover a message” as the claim requires.

Lastly, Mallory does not cure the above noted deficiencies of Campana, Jr.

For the above reasons, Appellants have shown the Examiner erred in rejecting claim 1 and dependent claims 3 and 6-8 under 35 U.S.C. § 103(a) based on the collective teachings of Mallory and Campana, Jr.

Claims 19, 20, and 22⁷

Representative independent claim 19⁸ differs in scope from claim 1. Independent claim 19 recites a receiver unit having a demodulator operative

⁷ See n.2, *supra*, of this opinion.

⁸ Claims 19, 20, and 22 have been argued as a group (App. Br. 17). Accordingly, we select independent claim 19 as representative. 37 C.F.R. § 41.37(c)(1)(vii).

“to provide a plurality of symbol streams, each symbol stream corresponding to a respective received transmission from one of a plurality of respective signal sources.” The Examiner finds that the combination of Mallory and Campana, Jr. teaches all the recited elements (Ans. 5). Appellants repeat the arguments made with respect to claim 1 related to the transmissions originating from a single source and not multiple sources (App. Br. 17). We are unpersuaded.

Claim 19 requires a plurality of symbol streams and each symbol stream corresponding to a transmission from *one of* a plurality of signal sources. Unlike claim 1, there is no limitation that the symbol streams correspond to transmissions from different or a plurality of sources. As discussed above, Campana, Jr. teaches such an arrangement where the transmissions are from one source. Campana, Jr. teaches two symbol streams or transmissions from one signal source (FF 4). Furthermore, Campana, Jr. teaches that plurality of signal sources 124 simulcast or transmit a plurality of symbol streams or first and second transmissions (FF 1-3). Thus, we find that Campana, Jr. teaches the limitation of “to provide a plurality of symbol streams, each symbol stream corresponding to a respective received transmission from one of a plurality of respective signal sources” recited in claim 19.

Additionally, claim 19 requires “a first detector operative to detect each frame in each recovered message as either a good frame or an erased frame” and “a frame assembler operative to form at least one combined message, if a message cannot be recovered error-free from a single symbol stream, wherein each combined message includes a particular combination of good frames substituting for erased frames in the message recovered from

a first symbol stream.” Claim 19 does not limit the origin of the good frames to any single or group of transmission(s) or signal source(s). Claim 19 merely requires that “each combined message includes a particular combination of good frames substituting for erased frames in the message recovered from a first symbol stream.” Campana, Jr. teaches transmitting a first symbol stream or transmission from a signal source 124 (FF 4). Campana, Jr. also teaches transmitting a second time-delayed symbol stream or transmission from the same signal source 124 (FF 4). Campana, Jr. further teaches substituting good frames or characters from the second stream with the erased or erroneous frames or markers of the first stream and combining the frames into a combined message (FF 5). Campana, Jr., therefore, teaches the limitations recited in claim 19.

For the above reasons, Appellants have not shown the Examiner erred in rejecting claim 19 based on the collective teachings of Mallory and Campana, Jr. Accordingly, we sustain the rejection of claim 19 and claims 20 and 22⁹ which fall with claim 19.

Claim 26

Claim 26 recites a digital signal processor having “means for processing a plurality of signal instances” to provide a plurality of symbol streams, each symbol stream corresponding to a transmission from one of a

⁹ As stated previously in Footnote 2, we presume that the Examiner intended to reject claim 22 as being unpatentable over Mallory, Campana, Jr., and Keskitalo. However, we treat this error as harmless and find that the rejection of claim 22 should also be sustained because claim 22 has not been separately argued (App. Br. 14-17) and the rejection of claim 21, as discussed below, has also been sustained.

plurality of respective signal sources, “means for detecting each frame in each recovered message as either a good frame or an erased frame,” and “means for forming at least one message, if a message cannot be recovered error-free from a single symbol stream, wherein each combined message includes a particular combination of good frames substituting for erased frames in the message recovered from a first symbol stream.” The Examiner finds that the combination of Mallory and Campana, Jr. teaches all the recited elements (Ans. 5). Appellants repeat the arguments made with respect to claim 1 (App. Br. 17).

Given the above-quoted language of claim 26, we find that the scope of claim 26 is similar to claim 19. Claim 26 recites “each symbol stream corresponds to a respective received transmission from *one of* a plurality of respective signal sources” (emphasis added) and does not specify that the good frames of a recovered message are from a different signal source than the erased frames. As such, the claim permits the good and erased frames to be from different symbol streams or transmissions of the same signal source, such as the first and second streams of Campana, Jr. (FF 2-5). We are, thus, not persuaded by Appellants’ arguments for the reasons previously discussed in connection with claim 19.

For the above reasons, Appellants have not shown the Examiner erred in rejecting claim 26 based on the collective teachings of Mallory and Campana, Jr.

Claim 27

Claim 27 is identical in scope to claim 26, with the exception that the preamble recites a receiver apparatus rather than a digital signal processor.

The Examiner finds that the combination of Mallory and Campana, Jr. teaches all the recited elements (Ans. 5). Appellants repeat the arguments made with respect to claim 1 (App. Br. 17). We are, thus, not persuaded by Appellants' arguments for the reasons previously discussed in connection with claims 1, 19 and 26.

For the above reasons, Appellants have not shown the Examiner erred in rejecting claim 27 based on the collective teachings of Mallory and Campana, Jr.

REJECTION OVER MALLORY, CAMPANA, JR., AND KESKITALO

We next turn to the rejection of claims 2, 9-12, 14-17, 21, 24, and 25 under 35 U.S.C. § 103(a) as being unpatentable over Mallory, Campana, Jr., and Keskitalo.

Claims 2, 9-12, 14-17

Claims 2, 9-12, and 14-17 depend from claim 1 directly or indirectly. As discussed above, the combination of Mallory and Campana, Jr. does not teach all the limitations in claim 1. Moreover, Keskitalo does not cure the above noted deficiencies or teach “determining good frames recovered from remaining ones of the plurality of received transmissions” and “forming at least one combined message, wherein the combined message includes a particular combination of good frames substituting for the erased frames” as claim 1 requires. We are, thus, persuaded by Appellants' arguments for the reasons previously discussed in connection with claim 1.

For the above reasons, Appellants have shown the Examiner erred in rejecting claims 2, 9-12, and 14-17 under 35 U.S.C. § 103(a) based on the collective teachings of Mallory, Campana, Jr., and Keskitalo.

Claims 21, 24, and 25

Representative dependent claim 21¹⁰ depends from claim 19 and further recites the decoder is operative to combine symbols for two or more frames from two of more symbol streams and decode the combined symbols to derive a good frame for the erased frame. The Examiner finds that the combination of Mallory, Campana, Jr., and Keskitalo teaches all the recited elements (Ans. 6). Apart from merely asserting in subheading (1) that the limitations of claim 21 are not found in the cited prior art (App. Br. 18), Appellants do not specifically address the Examiner's specific positions articulated in the Answer or explain why these positions are deficient. Merely pointing out what a claim recites is not considered an argument for separate patentability of the claim. 37 C.F.R. § 41.37(c)(1)(vii). In any event, such conclusory statements fall well short of rebutting the Examiner's rejection.

For the above reasons, Appellants have not shown the Examiner erred in rejecting claims 21, 24, and 25 based on the collective teachings of Mallory, Campana, Jr., and Keskitalo.

¹⁰ Claims 21, 24, and 25 have not been separately argued (App. Br. 18). Accordingly, we select claim 21 as representative. 37 C.F.R. § 41.37(c)(1)(vii).

REJECTION OF MALLORY, CAMPANA, JR., AND ALANARA

We finally turn the rejection of claims 4, 5, 18, and 23 under 35 U.S.C. § 103(a) as being unpatentable over Mallory, Campana, Jr., and Alanara.

Claims 4 and 5

Claims 4 and 5 depend from claim 1 directly or indirectly. As discussed above, the combination of Mallory and Campana, Jr. does not teach all the limitations found in claim 1. Moreover, Alanara does not cure the above noted deficiencies or teach “determining good frames recovered from remaining ones of the plurality of received transmissions” and “forming at least one combined message, wherein the combined message includes a particular combination of good frames substituting for the erased frames,” as claim 1 requires. We are, thus, persuaded by Appellants’ arguments for the reasons previously discussed in connection with claim 1.

For the above reasons, Appellants have shown the Examiner erred in rejecting claims 4 and 5 under 35 U.S.C. § 103(a) based on the collective teachings of Mallory, Campana, Jr., and Alanara.

Claim 18

Independent claim 18 recites a method for selectively combining a plurality of transmissions “from a plurality of respective signal sources to recover a page message comprised of a plurality of frames, comprising: processing each of the plurality of non-synchronous forward link received transmissions from the plurality of respective signal sources separately to recover the page message.” The Examiner finds that the combination of

Mallory, Campana, Jr., and Alanara teaches all the recited elements (Ans. 7-10). Appellants repeat the arguments that the transmissions originate from a single source and not multiple sources (App. Br. 20-21).

We find the scope of claim 18 more akin to claim 1 than claim 19. Claim 18 requires the step of processing a plurality of transmissions from a plurality of signal sources to recover the page message. As discussed above with respect to claim 1, neither Mallory nor Campana, Jr. teaches the feature of processing transmission from more than one signal source to recover a message. We, hereby, incorporate that discussion by reference. Moreover, Alanara does not cure the above noted deficiencies of Mallory and Campana, Jr.

For the above reasons, Appellants have shown the Examiner erred in rejecting claim 18 under 35 U.S.C. § 103(a) based on the collective teachings of Mallory, Campana, Jr., and Alanara.

Claim 23

Claim 23 depends from claim 19 and further recites the first and second detectors are cyclic redundancy check checkers. The Examiner finds that the combination of Mallory, Campana, Jr., and Alanara teaches all the recited elements (Ans. 10). Appellants refer to the arguments made with respect to claim 19 (App. Br. 21-22). We are, however, not persuaded by Appellants' arguments for the reasons previously discussed in connection with claim 19.

For the above reasons, Appellants have not shown the Examiner erred in rejecting claim 23 based on the collective teachings of Mallory, Campana, Jr., and Alanara.

CONCLUSION

(1) For the foregoing reasons, Appellants have not shown the Examiner erred in finding that: (a) the combination of Mallory and Campana, Jr. teaches all the limitations of independent claims 19, 26, and 27; (b) the combination of Mallory, Campana, Jr., and Keskitalo teaches all the limitations in claim 21; and (c) the combination of Mallory, Campana, Jr., and Alanara teaches all the limitations in claim 23.

(2) For the foregoing reasons, Appellants have shown the Examiner erred in finding that the combination of Mallory and Campana, Jr. teaches all the limitations found in independent claim 1 or the combination of Mallory, Campana, Jr., and Alanara teaches all the limitations found in independent claim 18.

DECISION

We have sustained the Examiner's rejection of claims 19-27 and reversed the Examiner's rejections with respect to claims 1-12 and 14-18. Accordingly, the Examiner's rejection of claims 1-12 and 14-27 is affirmed-in-part.

No period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED-IN-PART

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